

FACULTY OF ENGINEERING

B.E. 4/4 (Common to All) I-Semester (New) (Main) Examination, December 2013

**Subject : Entrepreneurship
(Electives - I)**

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What is meant by intrapreneur? How is an intrapreneur different from an entrepreneur?
2. Give different concepts of entrepreneurs.
3. State the significance of collaborative interaction for technology development.
4. What do you understand by marketing mix?
5. Define a project report.
6. Distinguish between PERT and CPM.
7. What is working capital?
8. What is selective control of inventory ? Why is it needed?
9. How is a project formulated?
10. What is microenterprise?

PART – B (50 Marks)

11. Explain linkages between small, medium and large industries.
- 12.(a) Explain about first generation entrepreneur.
(b) Explain about women entrepreneur.
- 13.(a) Write an essay on the growth of entrepreneurship in India.
(b) How are Competence, Opportunities and Challenges related to each other?
14. What do you understand by project identification? Discuss with examples, the process involved in project identification.
- 15.(a) How is a project formulated? Give an overview.
(b) What do you understand by project appraisal ? Why it is done?
- 16.(a) What are various factors motivating people to become entrepreneurs?
(b) Discuss the advantages and limitations of PERT and CPM with suitable examples.
17. Write short notes on the following:
 - (a) Technical Feasibility
 - (b) Market Assessment
 - (c) Working Capital

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B.E. 4/4 I – Semester (Old) Examination, December 2013

Subject: Entrepreneurship (Elective – I)

Time: 3 Hours

Max.Marks: 75

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. Enumerate at least three advantages of SSI units over large units.
2. List the advantages and disadvantages of Private Limited Company over 'Sole Trader'.
3. Explain the factors to be considered while deciding on the choice of technology.
4. What is break-even analysis? Explain its use in financial analysis of a project.
5. What are the sources of short-term funds?
6. How do you carry out business opportunity survey?
7. When do you use PERT? Give two examples.
8. Explain any two qualities of Leadership.
9. Describe the need for achievement, need for affiliation and need for power.
10. What is working capital? How do you estimate it?

PART – B (50 Marks)

- 11.(a) Define leadership. Justify the statement "The essence of leadership is followership".
(b) What are the theories of leadership? Explain.
12. What Time Management Techniques are available that ensure a project being completed on time.
- 13.(a) Bring out the relationship between economic growth and entrepreneurship.
(b) What is CPM? Explain its use in planning a project execution for a SSI.
- 14.(a) What are the risks faced and rewards gained by entrepreneurs while setting up a SSI?
(b) What is business opportunity survey? Explain how do you carryout the same.
- 15.(a) What are the problems and risks faced by women entrepreneurs?
(b) What is margin money? What are the sources of finance for starting a SSI?
16. What are the issues considered in Technical and Financial analysis of a project? Explain how you will carryout the same.
17. For any project known to you, show a detailed project report.

FACULTY OF ENGINEERING**B.E. 4/4 (M/P/AE) I – Semester (New) (Main) Examination, December 2013****Subject : Design for Manufacture (Elective – I)****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

1. What is Design for Manufacturability? (2)
2. What is Tolerancing? (2)
3. What do you mean by thermoplastic and thermosetting plastic? (3)
4. Draw a sketch to demonstrate 'spinning' operation. (3)
5. What are various ways in which screw threads are produced? (3)
6. What are the general design considerations for effective rolled parts? (3)
7. Explain how soldering differs from brazing. (2)
8. Explain the applications of blow moulding process. (2)
9. What are the types of formats in NC-program presentation? (3)
10. What is the importance of surface finishing operation? (2)

PART – B (50 Marks)

- 11.a) What are the general design principles for manufacturing?
b) Explain about composition and application of :
i) Hot rolled steel ii) Cold rolled steel iii) Stainless steel
- 12.a) Write about the extrusion process (both Hot and cold). Give its applications.
b) What are the general design considerations for stamping operation and parts produced by machinery?
- 13.a) What is centerless grinding? What are its applications and what are general design considerations for parts produced using centreless grinding.
b) Explain the design considerations for investment CAST parts.
- 14.a) What is ECM? Explain by means of neat sketch.
b) Explain how a bearing is assembled or mounted on a shaft.
- 15.a) What is Press fit? Give some applications with reference to Geometric Tolerancing.
b) What is computer aided manufacture? Explain various stages in it.
- 16.a) What are the design considerations for assembly?
b) What are ceramics? How are they processed?
17. Write short notes on :
a) Composites b) Drilled parts and operations of drilling c) Injection moulding

FACULTY OF ENGINEERING**B.E. 4/4 (M/P/AE) I – Semester (New) (Main) Examination, December 2013****Subject : Design for Manufacture (Elective – I)****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

1. What is Design for Manufacturability? (2)
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FACULTY OF ENGINEERING

B.E. 4/4 (M/P/AE) I – Semester (New) (Main) Examination, December 2013

Subject : Computational Fluid Flows (Elective – I)

Time : 3 hours

Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.**PART – A** (10 x 2.5 = 25 Marks)

1. Derive continuity equation in integral form.
2. Explain the meaning of conservative and non-conservative form of governing equations.
3. What is turbulence closure? List any four turbulence models.
4. Explain prandtl mixing length model.
5. Define consistence, stability and convergence.
6. Draw the computational stencil for explicit, implicit and crank Nicholson schemes.
7. Explain O, H, C grids with suitable examples.
8. Write down the boundary conditions for lid driven cavity flow.
9. List out the basic rules of finite volume method formulation.
10. Why is staggered grid adopted in incompressible flows?

PART – B (5 x 10 = 50 Marks)

11. Starting from N-S equations for viscous flow, derive two dimensional Reynolds averaged momentum equation.
12. How do you classify 2nd order PDE? Explain role of each on CFD.
- 13.a) Derive backward difference equation for second derivative with second order accuracy.
- b) Define and derive expression for substantial derivative.
14. Use the Gauss seidel method to obtain the solution of the following equations. Take initial guess [0 0 0].

$$6x_1 - 2x_2 + x_3 = 11 \quad \text{---- (1)}$$

$$x_1 + 2x_2 - 5x_3 = -1 \quad \text{---- (2)}$$

$$-2x_1 + 7x_2 + 2x_3 = 5 \quad \text{---- (3)}$$

15. A rod of steel is subjected to a temperature of 100°C on the left end and 25°C on the right end. If the rod is of length 0.05m, Find the temperature distribution in the rod from t = 0 and t = 9 seconds. Use $\Delta x = 0.01m$, $\Delta t = 3s$. By using explicit scheme. Given :

$$k = 54 \frac{W}{m \cdot K}, \quad \rho = 7800 \frac{kg}{m^3}, \quad C = 490 \frac{J}{kg \cdot K}.$$

16. Explain in detail the method of solving an incompressible flow problem using SIMPLE algorithm. Also draw the flow chart.
17. What is the basic philosophy used in vorticity stream function method? Explain step by step process to solve N-S equation by vorticity stream function method.

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FACULTY OF ENGINEERING

B.E. 4/4 (M/P/AE) I – Semester (New) (Main) Examination, December 2013

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FACULTY OF ENGINEERING

B.E. 4/4 (A/P/AE) I – Semester (New) (Main) Examination, December 2013

Subject : Composite Materials (Elective – I)

Time : 3 hours

Max. Marks : 75

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.**PART – A (25 Marks)**

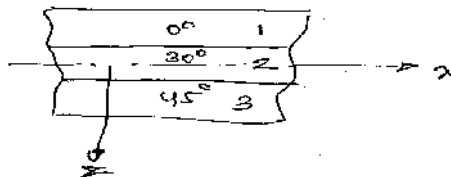
1. Classify the composite materials. (3)
2. State the advantages of PMC's. (2)
3. What is the significance of gel-time test? (3)
4. Define prepreg. (2)
5. Differentiate amotropic, orthotropic, transversely isotropic and isotropic materials interms of no. of classic constants. (3)
6. Define 'micro-mechanisms' w.r. to composites. (2)
7. Define Quasi-isotropic laminates. (3)
8. Obtain stress-transformation matrix about an axis interms of directional cosines. (2)
9. Define maximum strain criterion. (3)
10. Define 'minimum fiber volume' fraction. (2)

PART – B (50 Marks)

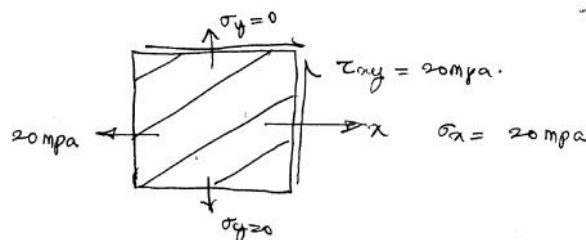
11. With a neat sketch, explain Resin-transfer moulding. (10)
12. Differentiate between thermoset and thermo-plastic matrices. State advantages and disadvantages of each. (10)
- 13.a) Derive an expression for Young's modulus in transverse direction using MOM approach. (7)
- b) Write Halpin-Tsai equation for E_2 . (3)
- 14.a) Define Quasi-isotropic laminate. (3)
- b) For a 3-ply laminate having 3mm thickness of each has

$$[Q] = \begin{bmatrix} 20 & 0.7 & 0 \\ 0.7 & 2 & 0 \\ 0 & 0 & 0.7 \end{bmatrix} \text{ GPa}$$

Obtain A, B and D matrices.



15. For a lamina shown below, decide the failure based on Tsai-Hill failure $\theta = 45^\circ$. (10)



$$F_{1t} = 500 \text{ MPa} ; F_{2t} = 10 \text{ MPa} ; F_{2c} = 75 \text{ MPa} ; F_{1c} = 350 \text{ MPa} ; F_{12} = 35 \text{ MPa}.$$

16. Write short notes on the following : (10)
 - a) functions of matrix
 - b) functions of reinforcements
 - c) requisites of matrix material
17. Discuss the following: (10)
 - a) pultrusion
 - b) up lamina
 - c) band-lay up

FACULTY OF ENGINEERING

B.E. 4/4 (A/P/AE) I – Semester (New) (Main) Examination, December 2013

Subject : Composite Materials (Elective – I)

Time : 3 hours

Max. Marks : 75

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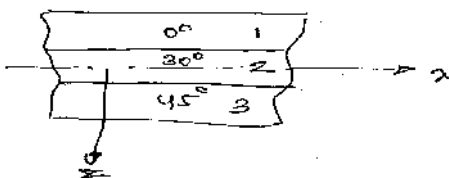
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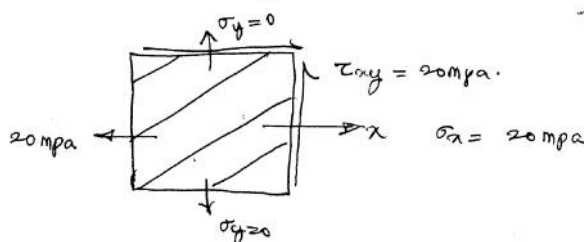
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FACULTY OF ENGINEERING**B.E. 4/4 (M/P/AE) I-Semester (New)(Main) Examination, December 2013****Subject : Disaster Mitigation and Management
(Electives - I)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. What is Risk? Illustrate the four factors which contribute to risk.
2. As per the latest seismic zoning map of India, New Delhi lies in zone IV, where as Mumbai and Chennai lie in zone:
(a) II (b) III (c) IV (d) V
3. Identify the elements at risk with reference to a Tsunami.
4. Mention the distribution of landslides in India.
5. What are flash floods and how do they occur?
6. Suggest any three methods of prevention or control avalanches.
7. Identify the poisonous gas that leaked out of the pesticide factory of Union Carbide into the air at Bhopal on 2nd/3rd December, 1984.
8. Define the terms - multistage, multi-spectral and multi-temporal remote sensing.
9. Illustrate with a flow diagram to understand the GIS analysis procedure for getting different layers of information form a digitized topographic map.
10. What do you know about Retrofitting of Lifeline buildings?

PART – B (50 Marks)

- 11.(a) "Bomb blasting has become order of the day"-Discuss the detection, prevention and main mitigation strategies.
(b) Discuss the progress made in the International Decade for Natural Disaster Reduction (IDNDR) with reference to India.
- 12.(a) Explain the basic concepts of Engineered structures to withstand both earthquakes and cyclones.
(b) Explain in detail the main mitigation strategies to control droughts.
- 13.(a) Illustrate a significant of major chemical and industrial disaster that you know.
(b) Discuss the causes of aircraft, rail and road traffic accidents.
- 14.(a) What do you know about the spectral reflectance of vegetation, soil and water?
(b) Explain the GIS analysis procedure to understand the magnitude of loss caused by a cyclone.
- 15.(a) Vulnerability = People + Condition + Place + Time + Event.
Explain the above equation form vulnerability Analysis point of view.
(b) Explain the Disaster management cycle.
- 16.(a) Identify India's key vulnerabilities with respect to Natural Disasters.
(b) Discuss the National Disaster Management Framework to reduce the Country's vulnerability to earthquake disaster.
17. Explain in detail the effects of Natural Disaster on economy and development of our country.

FACULTY OF ENGINEERING**B.E. 4/4 (M/P/AE) I-Semester (New)(Main) Examination, December 2013****Subject : Disaster Mitigation and Management
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FACULTY OF ENGINEERING**B.E. 4/4 (AE) I-Semester (Main) Examination, December 2013****Subject : Vibrations and Noise Control
(Electives - I)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. Explain undamped and damped vibration.
2. Explain the types of Damping.
3. Explain piston slap from diesel engines.
4. Explain how noise can be reduced inside the car.
5. Define frequency analysis and sound quality analysis.
6. State the contribution of sound meter in Noise measurement.
7. Explain unturned viscous damper.
8. Define engine isolation.
9. Explain sound absorption through barriers.
10. List out over all noise levels of engine.

PART – B (50 Marks)

- 11.(a) Explain with neat sketch (i) Longitudinal vibration (ii) Torsional vibration (5)
(b) With the help of neat diagram describe the construction and working of vibration damper. (5)
- 12.(a) Explain noise measurement system. (5)
(b) What are the types of micro phones, explain any two. (5)
13. Explain the following : (10)
(a) Transmission noise
(b) Aerodynamic noise
(c) Tyre noise and brake noise
- 14.(a) Explain model analysis of shock absorbers. (5)
(b) Explain damping treatments and application dynamic forces generated by IC engines. (5)
- 15.(a) Explain the methods of reducing engine noise. (5)
(b) Explain Automotive noise control principles. (5)
- 16.(a) What are the measurements of exterior vehicle noise? (5)
(b) Explain model analysis of shock absorbers. (5)
- 17.(a) Describe the source identification of vehicle noise and vibration with a neat sketch. (5)
(b) With table explain measurement of exterior vehicle noise. (5)

FACULTY OF ENGINEERING**B.E. 4/4 (AE) I-Semester (Main) Examination, December 2013****Subject : Vibrations and Noise Control
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FACULTY OF ENGINEERING

B.E. 4/4 (AE) I-Semester (Main) Examination, December 2013

Subject : Control Systems Theory
(Elective-I)

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.**PART – A (25 Marks)**

1. Differentiate the type and order of a system. (2)
2. Obtain the transfer function for a closed-loop system. (3)
3. What are the properties of SFG? (3)
4. Define the term 'Sensitivity'. (2)
5. State Routh-Hurwitz criterion. (3)
6. Define band width. (2)
7. Why to linearize the non-linear systems? (3)
8. What do you mean by lead, lag and lead-lag compensation? (2)
9. What do you mean by zero input and zero state response? (3)
10. Define controllability. (2)

PART – B (50 Marks)

11. Obtain the state model of an armature controlled D.C. servomotor. (10)
- 12.(a) Determine the step, ramp, and parabolic error constants of a unity feed-back system whose open loop transfer function is (7)

$$G(S) = \frac{1000}{(1 + 0.1s)(1 + 10s)}$$
- (b) Explain sensitivity. (3)
13. Sketch the root-locus plot of a unity feedback system whose open-loop T.F is (10)

$$G(s) = \frac{k(s + 9)}{s(s^2 + 4s + 11)}$$
- 14.(a) Why lag network and lead network are called compensating network. (5)
- (b) Write the advantages of PID controller and their applications. (5)
15. Find the state model (phase - variable form) for the system in transfer function (10)

$$\frac{Y(s)}{U(s)} = \frac{s + 4}{s^3(6s^2 + 11s + 6)}$$

16. Sketch the nyquist plot for the transfer function (10)

$$G(s)H(s) = \frac{52}{(s + 2)(s^2 + 2s + 5)}$$

discuss its stability.

17. Define the terms: (10)
 - (a) Steady - state errors
 - (b) Settling time
 - (c) Peak overshoot

FACULTY OF ENGINEERING

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(Elective-I)

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PART – B (50 Marks)

11. Obtain the state model of an armature controlled D.C. servomotor. (10)
- 12.(a) Determine the step, ramp, and parabolic error constants of a unity feed-back system whose open loop transfer function is (7)

$$G(S) = \frac{1000}{(1 + 0.1s)(1 + 10s)}$$
- (b) Explain sensitivity. (3)
13. Sketch the root-locus plot of a unity feedback system whose open-loop T.F is (10)

$$G(s) = \frac{k(s + 9)}{s(s^2 + 4s + 11)}$$
- 14.(a) Why lag network and lead network are called compensating network. (5)
- (b) Write the advantages of PID controller and their applications. (5)
15. Find the state model (phase - variable form) for the system in transfer function (10)

$$\frac{Y(s)}{U(s)} = \frac{s + 4}{s^3(6s^2 + 11s + 6)}$$

16. Sketch the nyquist plot for the transfer function (10)

$$G(s)H(s) = \frac{52}{(s + 2)(s^2 + 2s + 5)}$$

discuss its stability.

17. Define the terms: (10)
 - (a) Steady - state errors
 - (b) Settling time
 - (c) Peak overshoot